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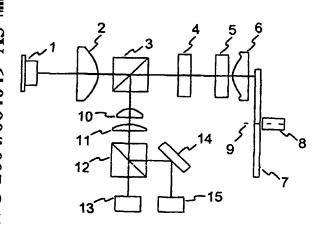
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(54) Title: APPARATUS FOR READING FROM AND/OR WRITING TO OPTICAL RECORDING MEDIA



(57) Abstract: When an optical recording medium (7) having a plurality of data layers is being read from and/or written to, the input beam, inter alia in the top layers of the data layers. To achieve a high data density, a device (4) for correcting the spherical aberration is located in the beam path. When an optical diode is just in which the input and reflected beams have perpendicular directions of polarization, such a device (4) is expensive to implement and associated with a reduced optical efficiency. An apparatus for reading from and/or writing to optical recording media is proposed, in which high optical efficiency and balancing of the spherical aberration are achieved with low outlay. The device (4) for correcting the spherical aberration is set up such that the reflected beam traverses it uninfluenced, whereby means (12, 16, 19) for correcting the imaging of the reflected beam onto at least one detector unit (13, 15, 17, 18, 20) are provided in the further beam path.

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A. CLASSIF	G11R7	SUBJECT MA	TTER	

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B. FIELDS SEARCHED

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

EPO-Internal, WPI Data

Citation of document, with indication, where appropriate, of	the relevant passages	Relevant to claim No
		l .
US 6 172 957 B1 (OGASAWARA MA 9 January 2001 (2001-01-09) column 3, line 47 - column 4, figure 1		1,2
paragraphs '0132!, '0134!; f' paragraph '0124!	1,2	
US 5 621 717 A (FINKELSTEIN BL AL) 15 April 1997 (1997-04-15) the whole document	AIR I ET	1,2
	-/	
documents are listed in the continuation of box C.	Patent family members are listed	in annex.
defining the general state of the art which is not at to be of particular relevance ument but published on or after the international which may throw doubts on priority claim(s) or ited to establish the publication date of another other special reason (as specified) referring to an oral disclosure, use, exhibition or uns published prior to the international filing date but the priority date claimed	cited to understand the principle or the invention "X" document of particular relevance; the cannot be considered novel or cannot involve an inventive step when the do "Y" document of particular relevance; the cannot be considered to involve an involv	the application but every underlying the every underlying the become invention becoment is taken alone taimed invention wentive step when the re other such docusis to a person skilled
ual completion of the international search		
July 2004	05/08/2004	
European Patent Office, P.B. 5818 Patentlaan 2 NL - 2280 HV Rijswijk Tel. (+31-70) 340-2040, Tx. 31 651 epo ni	Authorized officer	
	US 2002/036958 A1 (NISHINO SE 28 March 2002 (2002-03-28) paragraphs '0132!, '0134!; f paragraph '0124! paragraph '0091! - paragraph figures 9,10 US 5 621 717 A (FINKELSTEIN BI AL) 15 April 1997 (1997-04-15) the whole document documents are listed in the continuation of box C. The of cited documents: Idefining the general state of the art which is not do be of particular relevance at the international which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified) Which may throw doubts on priority claim(s) or led to establish the publication date of another other special reason (as specified)	US 2002/036958 A1 (NISHINO SEIJI ET AL) 28 March 2002 (2002-03-28) paragraphs '0132!, '0134!; figure 12 paragraph '0091! - paragraph '0120!; figures 9,10 US 5 621 717 A (FINKELSTEIN BLAIR I ET AL) 15 April 1997 (1997-04-15) the whole document -/ documents are listed in the continuation of box C. The whole document -/ The whole documents: defining the general state of the art which is not do be of particular relevance; the origination of the objection date of enother other special reason (as specified) esterring to an oral disclosure, use, exhibition or no and disclosure, use, exhibiti

INTERNATIONAL SEARCH REPORT

Internal Application No PCT/EP 03/14735

Continu	office) POOLULE	PCT/EP 03/14735
ategory °	ation) DOCUMENTS CONSIDERED TO BE RELEVANT	
versãoi à .	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
1	US 5 907 530 A (KIM EUNG-HO ET AL) 25 May 1999 (1999-05-25)	1
	the whole document US 5 909 422 A (KAMATANI YASUO) 1 June 1999 (1999-06-01)	1
, x	the whole document	
	US 2003/035350 A1 (YANAGISAWA TAKUMA ET AL) 20 February 2003 (2003-02-20) abstract paragraph '0004! - paragraph '0057! paragraph '0115!	1-5
		
	•	
	continuation of second sheet) (January 2004)	

INTERNATIONAL SEARCH REPORT

information on patent family members

International Application No PCT/EP 03/14735

						CIZEP 0	3/14735
	atent document d in search report		Publication date		Patent family member(s)		Publication date
US	6172957	B1	09-01-2001	JP	10269611	A	09-10-1998
US	2002036958	3 A1	28-03-2002	JP	2002100776		
			20 03 2002	JP	2002109776 <i>p</i> 2002352470 <i>p</i>	4	12-04-2002
					2002352470 F	4	06-12-2002
US	5621717	A	15-04-1997	JP	8335330 A	1	17-12-1996
				KR	238620 B		15-01-2000
115	5907530	Α	OF OF 1000				
	<i>55</i> 67556	A	25-05-1999	KR	200858 B	31	15-06-1999
				KR	234257 B	31	15-12-1999
				TA UA	217725 T	_	15-06-2002
				AU	694377 B	2	16-07-1998
				BR	6756796 A	l	19-03-1997
				CA	9606608 A 2202288 A	1	16-09-1997
				CN	1326188 A		06-03-1997
				CN	1362630 A		12-12-2001
				CN	1378205 A		07-08-2002
				CN	1362631 A		06-11-2002
				CN	1378206 A		07-08-2002
				CN	1332383 A		06-11-2002 23-01-2002
				CN	1164918 A	. B	12-11-1997
				CZ	9701281 A	3	17-06-1998
				CZ	9801362 A3	3	12-06-2002
				DE	69621227 D1	1	20-06-2002
				DE	69621227 T2	2	29-08-2002
				EP	1195753 A2	2	10-04-2002
				EP	0806039 A1	i	12-11-1997
				ES	2175119 T3	3	16-11-2002
	•			HK	1004700 A1	<u>[</u>	19-07-2002
				HU JP	9702047 A2	2	02-03-1998
				JP	10504927 T		12-05-1998
				JP	3186773 B2 2001209936 A		11-07-2001
				WO	9708691 A1		03-08-2001
				PL	320061 A1		06-03-1997
				PT	806039 T		01-09-1997
				us	5987924 A		31-10-2002
				US	5822135 A		23-11-1999 13-10-1998
				US	5665957 A		09-09-1997
				DE	19640837 A1		10-04-1997
				FR	2739717 A1		11-04-1997
			•	GB	2306045 A	, B	23-04-1997
				IT	MI961992 A1		27-03-1998
				JP	9120572 A		06-05-1997
				NL	1004079 C2		07-01-1998
				NL	1004079 A1		08-04-1997
	909422 	A	01-06-1999	US	5798994 A		25-08-1998
	03035350	A1	20-02-2003	JP	2003045047 A		14.00.000
US 20				JP	2003045047 A 2003045048 A		14-02-2003